



Forest Health Protection Pacific Southwest Region



Date: August 26, 2011

File Code: 3420

To: District Ranger, Scott River Ranger District, Klamath National Forest

Subject: Evaluation of bark beetle activity in the Indian Singleton LSR Thinning Project (FHP Report N11-09)

At the request of Dave Burgess and Carl Varak, Scott/Salmon RD, a field evaluation of pine plantations within the Singleton LSR Project was conducted on June 1, 2011. The objectives were to assess the current stand conditions and evaluate the project for potential funding through the Forest Health Protection (FHP) Western Bark Beetle Initiative (WBBI) Program. Roger Siemers (Klamath NF), Dave Burgess (Klamath NF), Cynthia Snyder (FHP) and Pete Angwin (FHP) were in attendance.

Background



Figure 1. Dense stocking of pine in the Singleton LSR stands.

The project area is four plantation units totaling 148 acres within the Singleton Late Successional Reserve (LSR). The purpose of which is to promote the continued development and retention of late-successional and old growth forest conditions. This is part of a larger project to treat 2,066 acres essential to the development of future late-successional habitat while maintaining as much of the existing forest structure as practical given the current stand conditions.

The location of the plantations visited is 4.5 miles south of the McKinney Saddle (opposite from the McKinney project on the Oak Knoll District) in the Singleton Creek drainage approximately 3.2 miles northwest of Fort Jones (T45N, R9W, Mt. Diablo Meridian, section 32). Elevation is between 4,700-5,500 feet, precipitation for the site averages between 35-45 inches per year.

NORTHERN CALIFORNIA SHARED SERVICE AREA
3644 AVTECH PARKWAY, REDDING, CA 96002
530-262-2437

Cynthia Snyder, *Entomologist*
clsnyder@fs.fed.us

Pete Angwin, *Plant Pathologist*
pangwin@fs.fed.us

These plantations were planted in 1969 and precommercially thinned in 1982. A follow-up commercial thinning was scheduled for 2008 but never completed. NEPA is in process. All stands are within at least one northern spotted owl (NSO) Activity Center/Buffer. The primary silvicultural prescription, variable density thinning from below, would be used to implement the proposed action. This silvicultural prescription is designed to maintain as much of the existing forest structure as practical given the current stand conditions.

These plantations are primarily ponderosa pine (*Pinus ponderosa*), with some incense cedar (*Calocedrus decurrens*), Douglas-fir (*Pseudotsuga menziesii*) and white fir (*Abies concolor*) ingrowth. Basal area average is approximately 140 square feet per acre with diameters averaging 14 inches DBH. Stand density index is approximately 280, well over the threshold of imminent bark beetle risk for ponderosa pine plantations of 230. The loss of the existing pine component would place these stands further from meeting the desired future (late-successional/old growth) condition.

Observations

We stopped at Unit 540-14 (N 41° 42.667', W 122° 54.339'). This is a 20 acres stand planted in 1969, pre-commercially thinned in 1982 with a commercial thinning planned for 2008 that has not happened. Pine average 14-16 inches DBH with an understory of Douglas-fir, white fir and incense cedar. Basal area was approximately 140 sq.ft./ac.

Past and ongoing bark beetle populations were in evidence. Several pockets of western pine beetle (*Dendroctonus brevicomis*) -caused mortality were seen throughout the stand ranging in size from 2-3 trees to 10-15 dead and green infested trees (up to ¼ acre). There were also several unsuccessfully attacked trees, revealed by clear and/or white colored pitch tubes present on the bole, near these pockets. These unsuccessful attacks indicate that the trees are currently able to defend themselves, but the number of attacks, in conjunction with the number of green infested trees, indicates that beetle pressure is still high and the trees that are hard hit will eventually succumb. There is also evidence of red turpentine beetle attacks at the bases of infested trees.



Figure 2. Western pine beetle attacks on a green infested pine within a mortality pocket.

Stands are in an overstocked, high hazard condition in terms of their susceptibility to future successful bark beetle attacks (SDI approximately 230-300). Currently, Northern

California is experiencing higher than normal precipitation including snowpack levels. This has had a dramatic effect of reducing bark beetle mortality in many stands with endemic western pine beetle populations. The effect can be seen in the number of trees with non-successful attacks. The high beetle pressure despite the water availability is likely to lead to further pine mortality until the number of beetles attacking is decreased to endemic levels.

Supporting Details	
Forest Type	Plantations
Location	Singleton LSR
Risk Map	High risk for bark beetle mortality
Watershed Classification	Upper Mill Creek Watershed (7 th field)
Landscape Treatment	148 acres of hand thinning
Proposed Treatment	Hand thin, pile and burn
NEPA	In process
Proposed Acres	148
Requested Funding	
Total Cost Per Acre	
Matching Funding	
Species Composition	PP, WF, DF, IC
Current Diameters	Ave. 14 inches
Residual Diameters	Ave. 14 inches
Current Stocking	SDI 280, BA 140
Target Stocking	SDI 98, BA 62
Agents of Concern	Western pine beetle
Recent Activity	Continued PP mortality by western pine beetle evidenced by mortality pockets
Current Susceptibility	High due to overstocking of larger diameter trees

Discussion

The Singleton LSR Project area has a currently active western pine beetle population with extensive mortality seen throughout the stands we visited. Conditions are currently overstocked with large diameter ponderosa pine and dense ingrowth of white fir and Douglas-fir. It is very likely that western pine beetle pressure will increase within these stands resulting in higher levels of pine mortality. There is currently an opportunity to remove infested pine and significantly reduce the amount of susceptible pine within the stand, reduce overall stand density to a sustainable level.

Variable spaced thinning from below as planned should be done to decrease the SDI with “gaps” concentrated around mortality pockets. Removing pockets of infested trees should be the top priority with a keen eye toward finding green infested trees near these pockets.

In general, stands should be thinned to 80-100 sq.ft./acre to reduce their susceptibility to bark beetle attacks. Currently, Northern California is experiencing higher than normal precipitation including snowpack levels. This has had a dramatic effect of reducing bark beetle mortality in many stands with endemic western pine beetle populations. The effect can be seen in the number of trees with non-successful attacks. Without project implementation, there exists a high probability that these stands will succumb to the intense beetle pressure and be significantly impacted by western pine beetle caused tree mortality when drought conditions resume in Northern California.

Summary

The proposed treatments, if fully implemented, will be effective in addressing concerns regarding bark beetles, fire and drought, and will meet the Regional Forester's density management policy that high risk density levels will not be reached again for at least 20 years. I fully support the treatments as described.

If you have any questions regarding this report and/or need additional information please contact Cynthia Snyder at 530-226-2437 or Pete Angwin at 530-226-2436.

/s/ Cynthia Snyder

Cynthia Snyder
Entomologist
Northern CA Shared Service Area

CC: Dave Burgess, Carl Varak, Roger Siemers, Ann Mileck, Pete Angwin, Sheri Smith, Julie Lydick and Phil Cannon